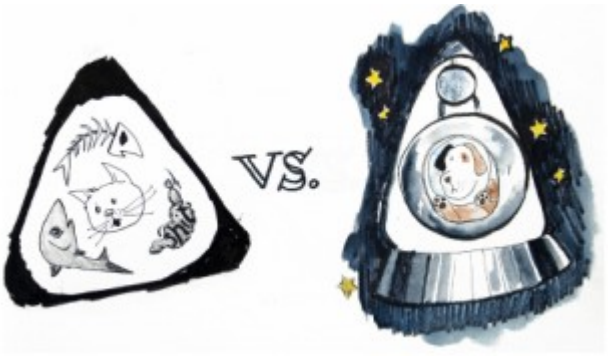

0x10 - Autonomy and a New High Tech by Cloacina

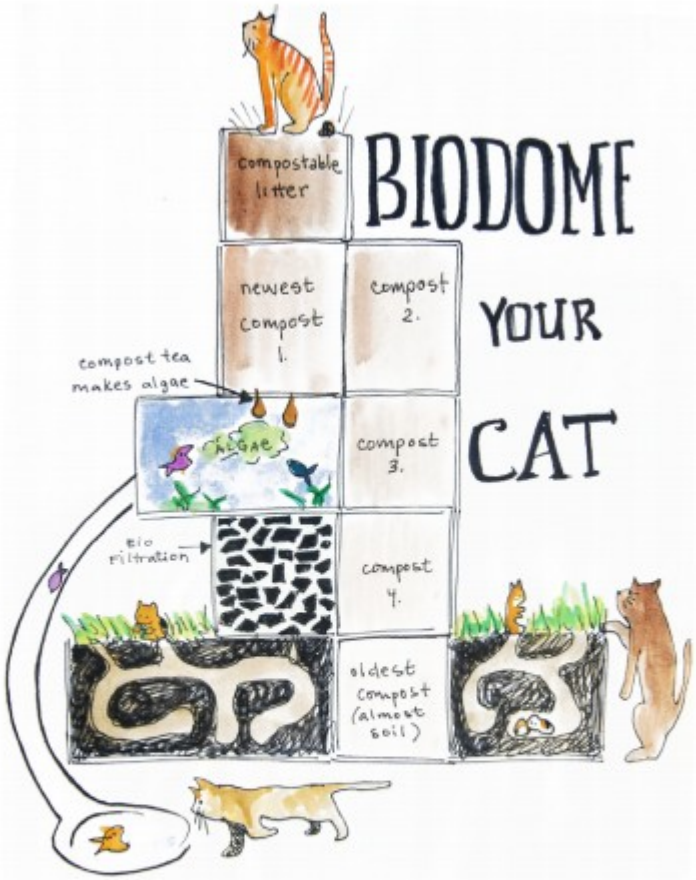


The Russians launched dogs into space because dogs are gullible. Laika was a model Soviet: a liberated female taking a leading role, subverting her own interest to that of the State. Obedient, loyal and unquestioning, she was asphyxiated, dying hungry and alone in a windowless steel can mounted atop a ballistic missile. Her true mission was naive deception, a scientific veneer over the technics of atomic apocalypse. Spacecraft now carry more luxuries for their crews -food, air, water, and re-entry systems- but the safe return of human beings does not mean that the forms of spacecraft have changed. They are still repurposed weapons systems first and human habitats second. Going to space has been an aesthetic and muscular display of energy concentration and a proving ground for power fantasies. Our contemporary technology owes much to the rigor harsh space environments place on machines.

We live in the space age: everything is designed to exist in an eternal vacuum, with no thought to objects' beginnings or endings. Zipping planetesimals formed the planets, and our collapsing consumer devices are crushing the earth. But space can be a wonderful goal: living in space means self-sufficiency, whole systems thinking, and closed resource cycles. Even in a low energy future, space is still the place to test our concepts, and the narrative of space a framework for re-imagining our world.

So we'd like to outline what a low energy space program would be about. A space program about soft, slow, objects teaming with life. By adopting the professed goals of military-industrial air-superiority and subverting the iconography of force projection, we can redefine technological progress from power and industry to biology and information.

Lichens may have been the dry earth's first colonists; tiny efficient guilds of interrelated organisms mixing fungi, algae, and bacteria. Lichens construct themselves mostly out of atmospheric gasses, efficiently replicating the structures necessary to their own survival. They are a small example of autopoiesis, autonomous self-sustenance and replication. These symbiotic organisms attain efficiencies far beyond our own creations; algae's solar efficiency is greater than 80%, more than twice the best human-made solar cells. Our solar cells require high energy and rare-earth minerals- Lichens absorb their materials from the atmosphere and uses a quantum-mechanical system to absorb sunlight, all at room temperature. Evaluated on performance criteria, our creations aren't nearly as high-tech as lichen.



We need a small astronaut to practice autopoiesis. Building and testing small-scale ecosystems focuses attention on the information systems and techniques of resource cycling . Dogs are followers, but cats try to maintain autonomy and judgement. We often assume they have better taste than us. When a house cat seems happy, clean, and odorless we feel at home. Cats judge comfort, and we believe them. A closed-loop ecosystem that meets a cat's criteria for comfort is a reasonable model of autonomy, and a cat needs only 1/10th the calories a person does. We're working on such a system beginning with high-temperature composting of cat crap.

(1) *ecosystems' access to energy and nutrients is stabilized through physical mass, redundancy, diversity, and secession* **(2)** *in regenerative human systems, information and informed action replace mass* **(3)** *the pursuit of lightness drives ecosystemic knowledge, informing the remediation of earth*

The autopoiesis of lichen offers a model of freedom. True autonomy can come only through the knowledge that one can grow and be sustained on one's own resources. Despite the difficulty of complete autopoiesis (even lichens need the atmosphere) all who hold autonomy maximizing ideologies aught to seek support systems approaching autopoiesis.

Each part of the lichen system supports the others; bacteria fix nitrogen, algae fix solar energy to carbohydrates, and fungi construct a environment for both while supplying algae with CO2. Experiments with integrated greenhouse aquaponics mirror this approach, with animals and plants held in equilibrium through human action.

But collecting information about the environment and transforming it into actions has traditionally taken massive inputs of expert observation and effort. Computerized information systems present an opportunity for significant labor-savings and performance improvement in constructed autopoietic food systems. Mutual aid and information exchange between autopoietic groups can shift expertese away from technical specialists and towards a network of autonomous communities. Keeping the harsh limits of life in space focuses lightness, efficiency, and escape from industrial dependence.

State-of-the art near-space craft are materially identical to plastic greenhouses, constructed from the same thin film plastics, PET & LLDPE. NASA floats multi-ton payloads over the north and south poles, suspended beneath superpressure balloons for months, holding steady 20 miles up. Autopoietic habitats on earth create the skill base for space.

Balloons, loping and directionless, huge and soft, are not a physical threat to the state the way missiles are. They are the spore of the idea that the state can be escaped, proof that high-energy industrialization has lost its edge. Sending fairly autonomous ecosystems into long-duration missions around the earth challenges state power in its own environment, on its terms of supremacy. It is a symbolic expression of statelessness and freedom, claiming the high ground for biology and information systems.

follow us at cloacina.org